

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES R. KITTRELL

Appeal No. 2005-0910
Application No. 09/684,173

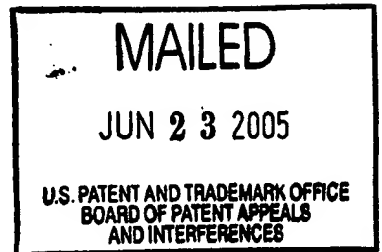
HEARD: June 7, 2005

Before GARRIS, DELMENDO, and PAWLIKOWSKI, Administrative Patent Judges.

DELMENDO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 (2004) from the examiner's final rejection of claims 27 and 28 (final Office mailed on April 4, 2003) in the above-identified application. According to both the appellant and the examiner (appeal brief filed on November 19, 2003 at 1; examiner's answer mailed on January 5, 2004 at 2), these two claims are the only pending claims.



The subject matter on appeal relates to a catalyst for converting contaminants in a gas stream (preferably air) by irradiating the contaminated gas with ultraviolet light in a first photocatalytic stage, wherein the photocatalyst is irradiated with ultraviolet light while in contact with the contaminated gas to convert at least a portion of the contaminants into less harmful products, and then passing the contaminated gas into a second catalytic stage, wherein the contaminant is exposed to a catalyst without further heating of the contaminated gas. (Specification, page 1.) The specification informs one skilled in the relevant art that the claimed catalyst may be used for both the first and second stage. (Pages 19-21.) Further details of this appealed subject matter are recited in representative claims 27 and 28 reproduced below:

27. A catalyst for converting contaminants in a gas stream comprises from about 0.1 wt.% to about 70 wt.% silica, from about 30 wt.% to about 90 wt.% titania, from about 10 wt.% to about 50 wt.% tungsten oxide and an element selected from the group consisting of platinum, palladium and mixtures thereof in an amount of between about 0.01 wt.% to about 5.0 wt. %

28. A catalyst according to claim 27, wherein said tungsten oxide is present is [sic] an amount of between about 20 wt.% to about 30 wt. %.

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The examiner relies on the following prior art reference as evidence of unpatentability:

| | | |
|------------------------|-----------|-----------------------|
| Kramer et al. (Kramer) | 6,086,749 | Jul. 11, 2000 |
| | | (filed Dec. 19, 1997) |

Claims 27 and 28 on appeal stand rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Kramer. (Examiner's answer at 3-4.)¹

We reverse the §102(e) rejection but affirm the §103(a) rejection.²

"To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently." In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997); accord Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995).

In addition, the prior art reference must disclose the limitations of the claimed invention "without any need for

¹ The examiner states that "the [final] rejection of claims 27-28 over Ohara (US Pat. 3,640,817) has been withdrawn." (Answer at 3.)

² The appellant submits that the appealed claims do not stand or fall together. (Appeal brief at 3.) Accordingly, we will address both claims to the extent that arguments in support of the separate patentability of the claims are presented in the

picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference." In re Arkley, 455 F.2d 586, 587, 172 USPQ 524, 526 (CCPA 1972); cf. In re Schaumann, 572 F.2d 312, 315, 316, 197 USPQ 5, 8, 9 (CCPA 1978) (holding that "the disclosure of a chemical genus...constitute[s] a description of a specific compound" within the meaning of §102 where the specific compound falls within a genus of a "very limited number of compounds.").

Applying these principles, we share the appellant's view (appeal brief at 4-5; reply brief filed on March 8, 2004 at 1-2) that Kramer does not describe every limitation of the claimed invention within the meaning of 35 U.S.C. § 102. As the appellant notes (appeal brief at 4), appealed claim 27 requires specific amounts of silica, titania, titanium oxide, and an element selected from the group consisting of platinum, palladium, and mixtures thereof. By contrast, the relied upon portion of Kramer teaches (column 36, line 63 to column 37, line 57):

In a preferred embodiment of the present invention, the catalyst of the present invention comprises an inorganic support which may include zeolites, inorganic oxides, such as silica, alumina,

appeal brief. See 37 CFR § 1.192(c)(7) (2003) (effective Apr. 21, 1995).

magnesia, titania and mixtures thereof, or any of the amorphous refractory inorganic oxides of Group II, III or IV elements, or compositions of the inorganic oxides. The inorganic support more preferably comprises a porous carrier material, such as alumina, silica, silica-alumina, or crystalline aluminosilicate. Deposited on and/or in the inorganic support or porous carrier material is one or more metals or compounds of metals, such as oxides, where the metals are selected from the groups Ib, Vb, VIb, VIIb, and VIII of the Periodic System. Typical examples of these metals are iron, cobalt, nickel, tungsten, molybdenum, chromium, vanadium, copper, palladium, and platinum as well as combinations thereof[.] Preference is given to molybdenum, tungsten, nickel, and cobalt, and combinations thereof[.] Suitable examples of catalyst of the preferred type comprise nickel-tungsten, nickel-molybdenum, cobalt-molybdenum or nickel-cobalt-molybdenum deposited on and/or in a porous inorganic oxide selected from the group consisting of silica, alumina, magnesia, titania, zirconia, thoria, boria or hafnia or compositions of the inorganic oxides, such as silica-alumina, silica-magnesia, alumina-magnesia and the like.

The catalyst of the present invention may further comprise additives which alter the activity and/or metals (and/or nitrogen and/or sulfur and/or any other elements) loading characteristics of the catalyst, such as but not limited to phosphorus and clays (including pillared clays). Such additives may be present in any suitable quantities, depending on the particular application for the hydroconversion process including the applied catalyst. Typically, such additives would comprise essentially from about zero (0)% by weight to about 10.0% by weight, calculated on the weight of the total catalyst (i.e. inorganic oxide support plus metal oxides). Although the metal components (i.e. cobalt, molybdenum, etc.) may be present in any suitable amount, the catalyst of the present invention preferably comprises from about 0.1 to about 60 percent by weight of metal component(s) calculated on the weight of the total catalyst (i.e.

inorganic oxide support plus metal oxides) or and more preferably of from about 0.2 to about 40 percent by weight of the total catalyst, and most preferably from about 0.5 to about 30 percent by weight of the total catalyst. The metals of Group VIII are generally applied in a minor or lesser quantity ranging from about 0.1 to about 30 percent by weight, more preferably from about 0.1 to about 10 percent by weight; and the metals of Group VIB are generally applied in a major or greater quantity ranging from about 0.5 to about 50 percent by weight, more preferably from about 0.5 to about 30 percent by weight; while as previously mentioned above, the total amount of metal components on the porous inorganic support is preferably up to about 60 percent by weight (more preferably up to about 40 percent by weight) of the total catalyst. The atomic ratio of the Group VIII and Group VIB metals may vary within wide ranges, preferably from about 0.01 to about 15, more preferably from about 0.05 to about 10, and most preferably from about 0.1 to about 5. The atomic ratios would depend on the particular hydroprocessing application for the catalyst and/or on the processing objectives.

Because "picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference" is necessary to arrive at the claimed invention, we hold that Kramer's disclosure is not sufficiently specific to have placed the claimed catalyst in the possession of a person having ordinary skill in the art. Accordingly, we cannot affirm this rejection.

The §103(a) rejection stands on different footing. Kramer teaches that the inorganic support "may include zeolites,

inorganic oxides, such as silica, alumina, magnesia, titania and mixtures thereof, or any of the amorphous refractory inorganic oxides of Group II, III or IV elements, or compositions of the inorganic oxides."³ (Column 36, line 63 to column 37, line 2.) In addition, Kramer discloses that one or more metals (e.g., iron, cobalt, nickel, tungsten, molybdenum, chromium, vanadium, copper, palladium, and platinum as well as combinations thereof) or compounds of these metals, such as oxides, may be deposited on and/or in the support in amounts that overlap those recited in the appealed claims. (Column 37, lines 4-11 and 31-57.)

Given Kramer's teachings, we agree with the examiner that one of ordinary skill in the art would have found it prima facie obvious to arrive at the subject matter recited in appealed claims 27 and 28 by merely selecting silica-titania, tungsten oxide, and palladium and/or platinum in the recited amounts as suggested by Kramer. Merck & Co. Inc. v. Biocraft Labs. Inc., 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989) ("That the [prior art reference] discloses a multitude of effective

³ While Kramer does not expressly state the suitable amounts of silica and titania when a mixture of silica and titania is selected as the inorganic support, the reference suggests that each may be used alone or in combination. This would have reasonably suggested to one of ordinary skill in the

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combinations does not render any particular formulation less obvious."); In re Arkley, 455 F.2d 586, 587, 172 USPQ 524, 526 (CCPA 1972) (explaining that "picking and choosing may be entirely proper" in the context of a §103 obviousness rejection); accord In re Susi, 440 F.2d 442, 445, 169 USPQ 423, 425 (CCPA 1971). Regarding the recited amounts for the catalyst components, it is well settled that when ranges recited in a claim overlap with ranges disclosed in the prior art, a prima facie case of obviousness typically exists and the burden of proof is shifted to the applicant to show that the claimed invention would not have been obvious. In re Peterson, 315 F.3d 1325, 1329-30, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003); In re Geisler, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990).

The appellant argues that "[t]he disclosed combinations of inorganic oxides which are suitable in the invention of the '749 patent [Kramer] do not include silica and titania" and "if anything, a fair reading of the '749 patent teaches away from the combination of silica and titania..." (Appeal brief at 4.)

art that a mixture of silica and titania in any ratio would also be suitable as a support.

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In support of this argument, the appellant relies on Kramer's disclosure at column 37, lines 19-20.

We are not persuaded. The relied upon disclosure of Kramer merely provides several exemplary combinations of supports. In this regard, we note that Kramer uses the phrase "and the like" following the list of exemplary combinations. (column 37, line 20.) This would have indicated to one of ordinary skill in the art that the exemplary combinations of supports are by no means exhaustive. Because Kramer's list of exemplary combinations is not exhaustive of all suitable combinations, it cannot be said to "teach away" from the claimed invention. At best, the specific support combinations listed in Kramer may be said to be more preferred combinations. However, our reviewing court has explained that the "case law does not require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide the motivation for the current invention." In re Fulton, 391 F.3d 1195, 1200, 73 USPQ2d 1141, 1145 (Fed. Cir. 2004). Rather, the court has instructed:

"[T]he question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination," not whether there is something in the prior art as a whole

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to suggest that the combination is the most desirable combination available.

Id. (quoting In re Beattie, 974 F.2d 1309, 1311, 21 USPQ2d 1040, 1042 (Fed. Cir. 1992); accord In re Gurley, 27 F.3d 551, 552-53, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994) ("A known or obvious composition does not become patentable simply because it has been described as somewhat inferior."). Here, Kramer does suggest that a combination of silica and titania would be suitable as the support. (Column 36, lines 63-66.)

The appellant alleges that "it is clearly out of the realm of the teaching of the '749 patent to have a titania content of 30 wt.% to 90 wt.% in combination with silica..." (Appeal brief at 5.) We disagree. Kramer teaches that inorganic oxides such as silica or titania may be used alone or in combination. This teaching would have reasonably suggested to one of ordinary skill in the art that a combination of silica and titania in any ratio would be suitable as a support as well.

With respect to appealed claim 28, the appellant contends that "there is no suggestion or teaching in the '749 patent of a catalyst composition as claimed...which comprises silica and titania wherein titania [sic, tungsten oxide] is in the specified amount of 20-30 wt.% [sic, about 20 wt.% to about 30

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wt.%]." (Appeal brief at 7.) This contention is also without merit. Kramer teaches that an oxide of a metal such as tungsten may be used in amounts that overlap those recited in appealed claim 28. (Column 37, lines 4-13 and 28-57.)


For these reasons, we reverse the examiner's rejection under 35 U.S.C. § 102(e) of appealed claims 27 and 28 as anticipated by Kramer. We affirm, however, the rejection under 35 U.S.C. § 103(a) of appealed claims 27 and 28 as unpatentable over Kramer.

The decision of the examiner to reject the appealed claims is affirmed.


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No time period for taking any subsequent action in
connection with this appeal may be extended under 37 CFR
§ 1.136(a)(1)(iv).

AFFIRMED


Bradley R. Garris
Administrative Patent Judge


Romulo H. Delmendo
Administrative Patent Judge


Beverly A. Pawlikowski
Administrative Patent Judge

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